Scientific directions of new National Space Program of Ukraine for the years 2007-2011

1. Earth observation (GEOSS process)

One of the priorities of the National Space Program is the development of the satellite constellation for continuous Earth observation data receipt in optical and radio-frequency band. It is supposed to develop a set of spacecrafts: Sich-2, Sich-2M with optical radiometers with spatial resolution about 8 m; Sich-3 with SAR with spatial resolution about 2 m.

Potential of this system could be integrated to the European monitoring system in future. Main areas of research: crop forecast, real-time monitoring of polluted sea surface, active atmospheric processes, ice status in the inland sea and Arctic region, snow melting dynamics.

2. Solar-Terrestrial connections

Ionospheric satellite project IONOSATS is the priority of new National Space Program. NSAU foresees development of low orbit constellation of 3 small satellites for space-time monitoring of ionosphere parameters, control of current condition and forecasting of space weather, diagnostics of natural and man-caused disasters. This project is a NSAU proposal in the framework of GMES activities.

3. Astrophysical research

Ground and space experiments are supposed to be conducted using the unique equipment of the National Space Facilities Test and Control Center (Crimean Peninsula). The Center's antennas are being additionally equipped at the moment. Incorporation of RT-70 radar into the world network of very long base interferometers (VLBI) would allow to fulfill radioastronomical missions (RADIOASTRON) and objectives related to space debris and asteroid safety. Upgraded RT-70 radar receiving facilities would allow obtaining telemetry information from far space spacecrafts in the framework of international programs.

4. International Space Station experiments

International Space Station Joint Research Program has been adopted by NSAU and Rosaviakosmos in 2002. The Program foresees a set of scientific projects to study influence of microgravity on physical and biological processes on the Russian segment of ISS. 48 Research Projects were selected in the framework of this Program. Main areas of research: biology of a cell, developmental biology, virus resistance, life duration and aging, cryogenic liquids, crystal grows, materials processing. First mission to be realized in 2007 is OBSTANOVKA ("Environment" in English) experiment aimed at the study of ISS environment.

5. Lunar mission

NSAU supports the preparation of following lunar studies:

Synthetic aperture imaging radar experiment in mm-range allowing studying permanently shadowed sites in the lunar polar regions (spatial resolution 50 m);

Imaging UV-VIS spectropolarimeter able to provide coverage of a large portion of the lunar surface in oblique viewing with spatial resolution (50 m). Polarization degree at large (>90c) phase angles bears information about the characteristic size of regolith particles. This experiment allows also mapping of Ti02 content.